

WHAT IS CLAIMED IS:

1. A decoding apparatus for decoding an input signal which includes a code stream and data having time management information about decoding of the code stream, comprising:
 - buffering means for buffering the input signal;
 - decoding means for reading out the input signal from said buffering means, decoding the input signal, and writing decoded data in a predetermined memory;
 - 10 output means for outputting the decoded data from the predetermined memory; and
 - control means for controlling said buffering means and said decoding means on the basis of the time management information.
- 15 2. The apparatus according to claim 1, wherein said control means checks a time necessary for decoding from the time management information, checks whether processing ends within a limit time, and when the time reaches the limit time before processing of all data ends, controls said decoding means to write decoded data in the predetermined memory.
- 20 3. The apparatus according to claim 2, wherein when the time reaches the limit time before processing of all data ends, said control means checks whether the decoded data have an image quality not lower than a preset lowest image quality, if the image quality is not higher than the lowest image quality, newly adds

time management information to add a processing time of next data to a processing time of current data, and discards the next data.

4. The apparatus according to claim 1, wherein said
5 decoding means reads out data from said buffering means in accordance with priority set by said control means, decodes the data, and writes the data at a position having the same priority in the predetermined memory.

5. The apparatus according to claim 4, wherein said
10 decoding means uses as a processing unit a tile obtained by dividing a frame at a predetermined size.

6. The apparatus according to claim 4, wherein the
priority set by said control means is determined to
change for each frame so as to prevent priority at the
15 same position from being the same between successive frames.

7. The apparatus according to claim 5, wherein the
priority set by said control means is determined to be
high at a tile of each frame near a center of a screen.

20 8. The apparatus according to claim 2, wherein when the time reaches the limit time before processing of all data ends, said output means outputs the decoded data written in the predetermined memory with an image size corresponding to a size of the written data.

25 9. The apparatus according to claim 2, wherein when the time reaches the limit time before processing of all data ends, said control means checks whether the

decoded data have an image size not smaller than a
preset smallest image size, if the image size is not
larger than the smallest image size, newly adds time
management information to add a processing time of next
5 data to a processing time of current data, and discards
the next data.

10. A method of controlling a decoding apparatus for
decoding an input signal which includes a code stream
and data having time management information about
10 decoding of the code stream, comprising:

a buffering step of buffering the input signal in
a predetermined buffer;

a decoding step of reading out the input signal
from the predetermined buffer, decoding the input
15 signal, and writing decoded data in a predetermined
memory;

a output step of outputting the decoded data from
the predetermined memory; and

a control step of controlling at least one of the
20 buffering step, the decoding step, and the output step
on the basis of the time management information.

11. The method according to claim 10, wherein in the
control step, a time necessary for decoding is
determined from the time management information,
25 whether processing ends within a limit time is checked,
and when the time reaches the limit time before
processing of all data ends, the decoding step is

controlled to write decoded data in the predetermined memory.

12. The method according to claim 11, wherein in the control step, when the time reaches the limit time
5 before processing of all data ends, whether the decoded data have an image quality not lower than a preset lowest image quality is checked, if the image quality is not higher than the lowest image quality, time management information is newly added to add a
10 processing time of next data to a processing time of current data, and the next data is discarded.

13. The method according to claim 10, wherein in the decoding step, data is read out from the buffering step in accordance with priority set in the control step,
15 decoded, and written at a position having the same priority in the predetermined memory.

14. The method according to claim 13, wherein in the decoding step, a tile obtained by dividing a frame at a predetermined size is used as a processing unit.

20 15. The method according to claim 13, wherein the priority set in the control step is determined to change for each frame so as to prevent priority at the same position from being the same between successive frames.

25 16. The method according to claim 14, wherein the priority set in the control step is determined to be high at a tile of each frame near a center of a screen.

17. The method according to claim 11, wherein in the output step, when the time reaches the limit time before processing of all data ends, the decoded data written in the predetermined memory are output with an image size corresponding to a size of the written data.
- 5 18. The method according to claim 11, wherein in the control step, when the time reaches the limit time before processing of all data ends, whether the decoded data have an image size not smaller than a preset
- 10 smallest image size is determined, if the image size is not larger than the smallest image size, time management information is newly added to add a processing time of next data to a processing time of current data, and the next data is discarded.
- 15 19. A storage medium which stores program codes functioning as a decoding apparatus for decoding an input signal which includes a code stream and data having time management information about decoding of the code stream, comprising:
- 20 a program code of the buffering step of buffering the input signal in a predetermined buffer;
- a program code of the decoding step of reading out the input signal from the predetermined buffer, decoding the input signal, and writing decoded data in
- 25 a predetermined memory;
- a program code of the output step of outputting the decoded data from the predetermined memory; and

a program code of the control step of controlling at least one of the buffering step, the decoding step, and the output step on the basis of the time management information.

5 20. The apparatus according to claim 3, further comprising lowest image quality setting means for setting the lowest image quality.

21. The apparatus according to claim 20, wherein said lowest image quality setting means sets the lowest
10 image quality in accordance with processing performance of said decoding means.

22. The apparatus according to claim 21, wherein said lowest image quality setting means sets the lowest image quality on the basis of relationship between the
15 processing performance of said decoding means and a designated playback speed.

23. The apparatus according to claim 22, wherein the apparatus further comprises a first table representing the relationship between the playback
20 speed and the lowest image quality, and

said lowest image quality setting means sets the lowest image quality corresponding to the designated playback speed with reference to the first table.

24. The apparatus according to claim 9, further
25 comprising smallest image size setting means for setting the smallest image size.

25. The apparatus according to claim 24, wherein said

smallest image size setting means sets the smallest image size in accordance with processing performance of said decoding means.

26. The apparatus according to claim 25, wherein said
5 smallest image size setting means sets the smallest image size on the basis of relationship between the processing performance of said decoding means and a designated playback speed.

27. The apparatus according to claim 26, wherein
10 the apparatus further comprises a second table representing the relationship between the playback speed and the smallest image size, and

said smallest image size setting means sets the smallest image size corresponding to the designated
15 playback speed with reference to the second table.

28. The method according to claim 12, further comprising the lowest image quality setting step of setting the lowest image quality.

29. The method according to claim 28, wherein in the
20 lowest image quality setting step, the lowest image quality is set in accordance with processing performance of the decoding step.

30. The method according to claim 29, wherein in the lowest image quality setting step, the lowest image
25 quality is set on the basis of relationship between the processing performance of the decoding step and a designated playback speed.

31. The method according to claim 30, wherein in the lowest image quality setting step, the lowest image quality corresponding to the designated playback speed is set with reference to a first table representing the relationship between the playback speed and the lowest image quality.

32. The method according to claim 18, further comprising the smallest image size setting step of setting the smallest image size.

10 33. The method according to claim 32, wherein in the smallest image size setting step, the smallest image size is set in accordance with processing performance of the decoding step.

34. The method according to claim 33, wherein in the smallest image size setting step, the smallest image size is set on the basis of relationship between the processing performance of the decoding step and a designated playback speed.

15 35. The method according to claim 34, wherein in the smallest image size setting step, the smallest image size corresponding to the designated playback speed is set with reference to a second table representing the relationship between the playback speed and the smallest image size.